CLARIFICATIONS CONCERNING THE NOMENCLATURE AND TAXONOMY OF *OXYPOLIS TERNATA* (APIACEAE)

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ABSTRACT

John R. Edmondson made the combination *Oxypolis denticulata* (Baldwin) J.R. Edm. based on the assumption that *Sium denticulatum* Baldwin was synonymous with *O. ternata* (Nutt.) A. Heller. An in-depth investigation into the taxonomic and nomenclatural history of these species has shown, however, that *S. denticulatum* Baldwin and *O. ternata* (Nutt.) A. Heller are not synonyms. In addition, the name *O. denticulata* (Baldwin) J.R. Edm. is an isonym of *O. denticulata* (Baldwin) Raf.

KEY WORDS: Apiaceae, isonym, *Oxypolis denticulata, Oxypolis rigidior, Oxypolis ternata, Peucedanum ternatum, Sium denticulatum*

RÉSUMÉ

John R. Edmondson hizo la combinación *Oxypolis denticulata* (Baldwin) J.R. Edm. de acuerdo con la suposición que *Sium denticulatum* Baldwin era un sinónimo de *O. ternata* (Nutt.) A. Heller. Una investigación detallada de la historia taxonómica y la nomenclatural de estos y de taxa relacionados sin embargo, ha demostrado que *S. denticulatum* Baldwin y *O. ternata* (Nutt.) A. Heller no son sinónimos. Además, el nombre *O. denticulata* (Baldwin) J.R. Edm. es un isónimo de *O. denticulata* (Baldwin) Raf.

In 2005, J.R. Edmondson published what he believed to be a new combination, *Oxypolis denticulata* (Baldwin) J.R. Edm., to include the names *Sium denticulatum* Baldwin, *Peucedanum ternatum* Nutt., and *O. ternata* (Nutt.) A. Heller. He argued that the name *O. denticulata* superseded *O. ternata*, the commonly cited modern name for this species. Further investigation into the nomenclatural and taxonomic history of these and related taxa has shown, however, that Edmondson made two important errors in proposing this combination: his name is an isonym, and *S. denticulatum* is not synonymous with *P. ternatum* and *O. ternata*.

In 1898, A. Heller transferred *Peucedanum ternatum* to *Oxypolis* and *O. ternata* became the commonly cited modern name for this species. Edmondson (2005) found an isotype of *Sium denticulatum* in the herbarium of the Linnean Society of London (LINN). He made the assumption that *P. ternatum* was synonymous with *S. denticulatum*. Since Heller's combination was based on Nuttall's (1818) epithet published after Baldwin's (Elliott 1817), Edmonson reasoned that the earlier name had priority and a new combination was warranted. Thus Edmondson proposed the combination *O. denticulata* and designated as the lectotype the LINN specimen (LINN-Smith no: 508.5) labeled "*Sium denticulatum* nov. sp." and collected by William Baldwin in 1817.

Edmondson went on to explain that when Rafinesque established the new genus *Oxypolis* (Rafinesque 1825), he included *Sium denticulatum* under *Oxypolis* but failed to make a new combination for the species. Edmondson was correct that Rafinesque did not make the new combination in 1825, but he overlooked that Rafinesque did make the combination five years later in the first volume of Bulletin Botanique (Bull. Bot. 1:218. 1830). Rafinesque's combination was clearly based on *S. denticulatum*, the same basionym upon which Edmondson based his combination. Consequently, the Edmondson isonym is without nomenclatural status and should be disregarded according to Article 6 Note 2 of the *International Code of Botanical Nomenclature* (McNeill et al. 2006).

The second error in Edmondson's combination was in assuming that *Sium denticulatum* was synonymous with *Peucedanum ternatum*, when in actuality, *S. denticulatum* is a synonym of *Oxypolis rigidior* (L.) Raf. The recognition of this synonymy is not unprecedented for in 1840 Torrey and Gray recognized *S. denticulatum* as a synonym of *S. rigidius* L., the basionym for *O. rigidior*.

The protologues for *Sium denticulatum* and *Peucedanum ternatum* provide the first clue that these species are not synonyms. Baldwin (Elliott 1817) described *S. denticulatum* as having "leaves unequally pinnate; leaflets oval, toothed, acute; ... generally with three pairs of leaflets and an odd one." In contrast, Nuttall (1818) characterized *P. ternatum* as having: "leaves all ternate, upon very long common petioles; partial leaves entire, long, linear, acute, and attenuated below... perfectly entire and scarcely three lines wide."

Comparing the lectotype of *Sium denticulatum* (Fig. 1) with the lectotype of *S. rigidius* (Fig. 2), and comparing these with herbarium specimens and published descriptions of *Oxypolis ternata* and *O. rigidior,* provide further clues and convincing evidence that *S. denticulatum* is a synonym of *O. rigidior* not *O. ternata*. Differences are especially apparent in the leaf morphology (Figs. 1–3). These and other morphological differences between the species are summarized in Table 1. Information in Table 1 was compiled from a number of sources (Weakley 2008; Radford & et al. 1968; Rodgers 1950; Mathias & Constance 1945; Torrey & Gray 1840), as well as from personal examination of numerous specimens from the following herbaria: DUKE, F, ILL, ILLS, NCU, UGA, USF, and USCH.

Oxypolis ternata and *O. rigidior* can be distinguished by the following: The leaves of *O. ternata* are either unifoliate or ternate and palmately disposed. The leaflets are petiolulate, parallel-veined, always entire, and filiform to linear, typically being no more than 6 mm wide. The number of rays on the compound umbel is 5–10. In contrast, the leaves of *O. rigidior* are pinnately disposed with 5–13 sessile leaflets, reticulate-veined, remotely dentate or entire (it is rare to find a plant without some leaflets that are dentate in the upper part of the leaf), linear-lanceolate to elliptic-lanceolate, and 5–45 mm wide. The number of rays is 12–45.

No type has been located for *Peucedanum ternatum*. Inquiries or searches were made of all herbaria listed by the Harvard University Herbarium Index of Botanists to have known Nuttall collections. Nuttall gave North and South Carolina as the locality for *P. ternatum*. A specimen collected in South Carolina by A.E. Radford is herein designated as the neotype (Fig. 3).

Oxypolis ternata (Nutt.) A. Heller, Cat. N. Amer. Pl. 5. 1898. *Peucedanum ternatum* Nutt., Gen. N. Amer. Pl. 1:182. 1818. *Sataria linearis* Raf., New Fl. 4:21. 1838 (nom. illeg.). *Archemora ternata* (Nutt.) Nutt. in Torr. & A. Gray, Fl. N. Amer. 1:631. 1840. *Tiedemannia ternata* (Nutt.) J.M. Coult. & Rose, Bot. Gaz. 12:74. 1887. TYPE: U.S.A. SOUTH CAROLINA. Georgetown Co.: ditch, near US 701, 3 mi S–SW of Yauhannah, 20 Oct 1957, *A.L. Radford 31381* (NEOTYPE, designated here: NCU!; DUPLICATES OF THE NEOTYPE: UC!, UF!, SMU!).

Sataria linearis Raf., var. *longipes* Raf., New Fl. 4:21. 1838. Rafinesque did not cite a specific collection or give a locality.

Neurophyllum longifolium Torr. & A. Gray, Fl. N. Amer. 1:613. 1840. TYPES: U.S.A. NORTH CAROLINA. [Cravern Co.]: "Swamps near Newbern, North Carolina, *Mr. Croom! Dr. Loomis!* Middle Florida, *Mr. Croom!* Sept." (LECTOTYPE, designated here: NY!). SYNTYPE: NORTH CAROLINA: New Bern, s.d., *H.B. Croom s.n.* (PH!).

Oxypolis rigidior (L.) Raf., Bull. Bot. 1:218. 1830. *Sium rigidius* L., Sp. Pl. 1:251. 1753. *Oenanthe rigidius* (L.) Crantz, Cl. Umbell. Emend. 85. 1767, '*rigida*'. *Pastinaca rigidior* (L.) Spreng. in Roemer & Schultes, Syst. Veg. 6:586. 1820, '*rigida*'. *Archemora rigidior* (L.) DC., Prodr. 4:188. 1830, '*rigida*'. *Peucedanum rigidius* A.W. Wood, Amer. Bot. Fl. 136. 1870, *nom. illeg.*, non Bunge (1833), '*rigidum*'. *Tiedemannia rigidior* (L.) J.M. Coult. & Rose, Bot. Gaz. 12:74. 1887, '*rigida*'. TYPE: U.S.A. VIRGINIA: *J. Clayton 279* (LECTOTYPE, designated by J.L. Reveal in C.E. Jarvis et al., Taxon 55:215. 2006: BM, digital image!).

Archemora serrata Raf., Herb. Raf. 78. 1833. TYPE: U.S.A. KENTUCKY & TENNESSEE: specimen not located.

Archemora trifoliata Raf., Herb. Raf. 78. 1833. TYPE: U.S.A. MISSOURI: specimen not located.

Oenanthe ambigua Nutt., Gen. N. Amer. Pl. 1:189. 1818. *Pastinaca ambigua* (Nutt.) Torr., Fl. N. Middle United States 315. 1824. *Archemora ambigua* (Nutt.) DC., Prodr. 4:188.1830. *Archemora rigidior* (L.) DC. var. *ambigua* A. Gray, Manual 158. 1848, '*rigida*'. *Peucedanum rigidius* A.W. Wood var. *ambiguum* A.W. Wood, Amer. Bot. Fl. 136. 1870, '*rigidum*'. *Tiedemannia rigidior* (L.) J.M. Coult. & Rose var. *ambigua* (Nutt.) J.M. Coult. & Rose, Rev. N. Amer. Umbell. 47. 1888, '*rigida*'. *Oxypolis rigidior* (L.) Raf., var. *ambigua* (Nutt.) B.L. Rob., Rhodora 10:35. 1908. TYPE: U.S.A. PENNSYLVANIA. Philadelphia Co.: banks of the Delaware River near Philadelphia, s.d., *T. Nuttall s.n.* (PH, digital image!).

Oxypolis turgida Small, Man. S.E. Fl. 986. 1933. TYPE: U.S.A. VIRGINIA. Staunton Co.: Staunton, 2 Oct 1895, *W.A. Murrill s.n.* (LECTOTYPE, designated here: NY!).

Sium denticulatum Baldwin in S. Elliott, Sketch Bot. S. Carolina 1:354. 1817. *Archemora denticulata* (Baldwin) DC., Prodr. 4:188. 1830. *Oxypolis denticulata* (Baldwin) Raf., Bull. Bot. 1:218. 1830. *Pastinaca denticulata* (Baldwin) D. Dietr., Syn. Pl. 2:971. 1840. TYPE: U.S.A. GEORGIA: 1817, *W. Baldwin s.n.* (LECTOTYPE, designated by Edmondson 2005: LINN-Smith, digital image!).

Sium longifolium Pursh, Fl. Amer. Sept. 194. 1813. *Oxypolis rigidior* (L.) Raf., var. *longifolia* (Pursh) Britton, Mem. Torrey Bot. Club 5:239.



FIG. 1. *Sium denticulatum* lectotype (LINN-Smith no.: 508.5) collected by William Baldwin in 1817. Image used with kind permission of the Linnean Society of London.



FIG. 2. *Sium rigidius/Oxypolis rigidior* lectotype (BM-000042233) collected by Clayton (no date given). Image used with kind permission of the Museum of Natural History, London.

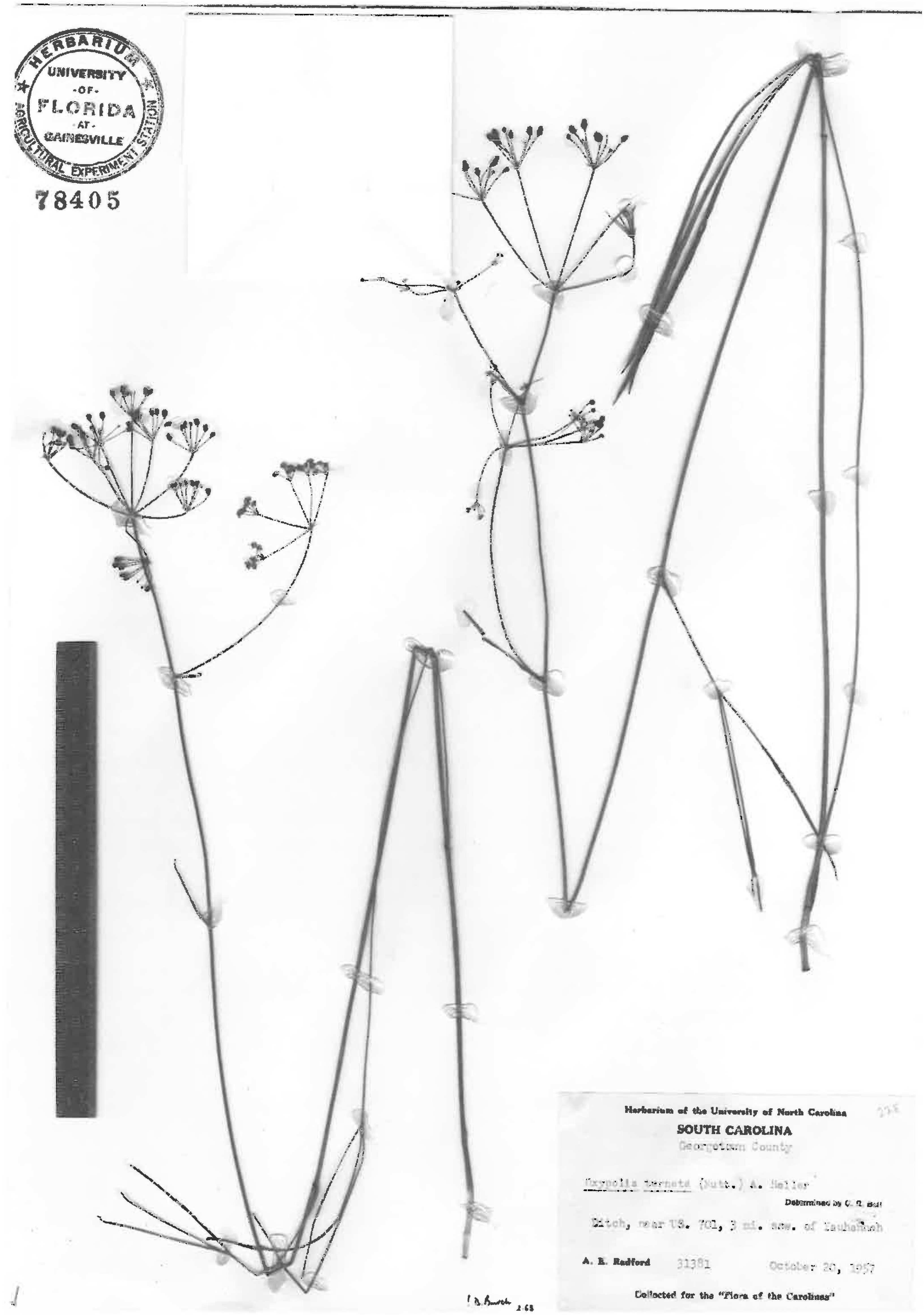


FIG. 3. *Oxypolis ternata* neotype (NCU-120497) collected by Radford in 1957.

TABLE 1. Morphological characters distinguishing *Oxypolis ternata* (Nutt.) A. Heller and *Oxypolis rigidior* (L.) Raf.

Characters	*Oxypolis ternata*	*Oxypolis rigidior*
Petiole length	10–30(–35) cm	5–10 cm
Leaf disposition	palmate	pinnate
Leaflet number	(1)3	(5–)7–11(–13)
Leaflet veination	parallel	reticulate
Leaflet margin	entire	(entire) remotely dentate
Leaflet shape	linear to filiform	linear-lanceolate to elliptic-lanceolate
Leaflet length	7–22	7–15 cm
Leaflet width	1–6 mm	5–45 mm
Leaflets	petiolulate	sessile
Ray number	5–10	12–45

1894, '*rigidus* var. *longifolius*'. *Oxypolis longifolia* (Pursh) Small, Fl. S.E. U.S. 875, 1336. 1903. *Oxypolis rigidior* (L.) Raf. subsp. *longifolia* (Pursh) W. Stone, Pl. S. New Jersey 2:600. 1911. TYPE: U.S.A. NEW JERSEY: (LECTOTYPE, designated with reservations by Ewan 1979: PH, digital image!).

Sium tricuspidatum Elliott, Sketch Bot. S. Carolina 1:354. 1817. *Archemora tricuspidata* (Elliott) DC., Prodr. 4:188. 1830. *Oxypolis tricuspidata* (Elliott) Raf., Bull. Bot. 1:218. 1830. *Pastinaca tricuspidata* (Elliott) D. Dietr., Syn. Pl. 2:971. 1840. TYPE: U.S.A. SOUTH CAROLINA: (HOLOTYPE: CHARL!).

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REFERENCES

EDMONDSON, J.R. 2005. A new combination in *Oxypolis* Raf. (Apiaceae). Novon 15:109.

ELLIOTT, S. 1817. A sketch of the botany of South Carolina and Georgia. 2 vols. J.R. Schenck, Charleston, South Carolina.

EWAN, J. 1979. Introduction to the facsimile reprint of Frederick Pursh, Flora Americae Septentrionalis (1814). In: F.T. Pursh, Flora Americae Septentrionalis. Facsimile reprint. J. Cramer, Braunschweig, Germany.

MATHIAS M. AND L. CONSTANCE. 1945. Umbelliferae. N. Amer. Fl. 28B:43–295.

MCNEILL J., F.R. BARRIE, H.M. BURDET, V. DEMOULIN, D.L. HAWKSWORTH, K. MARHOLD, D.H. NICOLSON, J. PRADO, P.C. SILVA, J.E. SKOG, J.H. WIERSEMA, AND N.J. TURLAND. 2006. International code of botanical nomenclature (Vienna Code). Regnum Veg. 146.

NUTTALL, T. 1818. The genera of North American plants, and a catalogue of species to the year 1817. 2 vols. D. Heartt, Philadelphia, Pennsylvania.

RADFORD, A.E., H.E. AHLES, AND C.R. BELL. 1968. Manual of the vascular flora of the Carolinas. University of North Carolina Press, Chapel Hill, North Carolina.

RAFINESQUE, C.S. 1825. Neogenyton, or indication of sixty-six new genera of plants of North America. Published by the author, Lexington, Kentucky.

RAFINESQUE, C.S. 1830. Extract d'une lettre de M.S.C. Rafinesque, professeur à Philadelphie, addressée à M. le professeur De Candolle. (Mai 1830). Bull. Bot. 1:214–221.

RODGERS C.L. 1950. The Umbelliferae of North Carolina and their distribution in the southeast. J. Elisha Mitchell Sci. Soc. 66:195–266.

TORREY, J. AND A. GRAY. 1840. A flora of North America. Wiley & Putnam, New York.

WEAKLEY, A.S. 2008. Flora of the Carolinas, Virginia, and Georgia, and surrounding areas. University of North Carolina Herbarium, North Carolina Botanical Garden, University of North Carolina at Chapel Hill.